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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/033,038

01/02/2002

Abhishek Ranjan Singh

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07/28/2006

ERICSSON INC.
6300 LEGACY DRIVE
M/S EVR C11
PLANO, TX 75024

EXAMINER

JUNG, MIN

ART UNIT

PAPER NUMBER

2616

DATE MAILED: 07/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

87

Office Action Summary	Application No.	Applicant(s)	
	10/033,038	SINGH ET AL.	
	Examiner	Art Unit	
	Min Jung	2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-15 and 30-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-15 and 30-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 2, 4-15 and 30-33 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claims 1 and 30, the limitations "setting a limit" and "places a limit" are not supported by the specification.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 2, 4-15, and 30-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 and 30, it is not clear whether the term "bound" enclosed by the parenthesis are meant to be a limitation. Please, note that a term enclosed by parenthesis is not given any weight in claim interpretation.

In claim 11, the clause is incomplete because it is lacking a verb.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 2, 4-11, 13-15, and 30-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Ji et al., US PG Pub. 2002/0172203 (Ji).

Ji discloses fast IP lookup with 16/K and 16/Kc compressed data structure.

Regarding claims 1 and 2 of present invention, Ji teaches a data network with router having memory for storing entries for a plurality of destinations from the router, a method of performing route lookup that places a bound on the number of accesses to the memory (see Abstract and [0048]-[0054]), the method comprising the steps of : determining the cost of all possible lookup architecture that can be constructed given the distribution of destinations in the data network (it is inherent in the teaching that the data structure includes the information regarding the cost of each route, see [0015]); choosing a lookup architecture which requires the minimum amount of memory to obtain the next hop of any destination and that places a bound on the number of memory accesses to obtain the next hop (16/K scheme requires less than 2MB memory to store the whole routing tables, and a 16/Kc version utilizes bitmaps to compress the table to less than 0.5 MB, and that places a bound of 2 memory accesses or 3 memory

accesses, see Abstract); and after receipt of a data packet, using the chosen lookup architecture to lookup a route for a destination address associated with the data packet ([0054] and [0074]).

Regarding claims 4 and 5, Ji teaches all possible lookup trees including a radix tree ([0012] and [0015]).

Regarding claims 6 and 7, Ji teaches storing the destination associated with data packets as IP addresses ([0029]).

Regarding claims 8-11, Ji teaches that the cost of route lookup is the two memory accesses and the three memory accesses, with the minimum cost associated with performing the route lookup being the two memory accesses, and the cost associated with performing the route lookup being based on the memory being 2MB or 0.5 MB (Abstract), and the cost associated with performing the route lookup being calculated based on a length of a destination address for the data packet ([0028] and [0029]).

Regarding 13-15, Ji teaches that optimum value associated with performing the route lookup is a cost associated with minimum memory usage in performing the route lookup (two or less accesses for 2MB scheme and three or less accesses for 0.5 MB scheme, [0015]).

Claims 30-33 recite the similar aspects of the invention recited in the claims 1-11, and 13-15, which are rejected as addressed above. Therefore, the same reasoning applies to this group of claims.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ji.

Ji fails to specifically teach calculating the search cost based on a height of the specific node in the binary tree and search costs associated with performing the route lookup of individual routes below the node. Ji, however, teaches tree structures including a binary tree for routing purposes (paragraph [0012]), and relying on number of hops for cost determination (throughout the specification). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to implement Ji's teaching by using the position of the node in the tree and the cost information (hop count) in the route below the node to determine the search cost.

Response to Arguments

9. Applicant's arguments filed June 29, 2006 have been fully considered but they are not persuasive. Applicant argues that "In contrast to Ji, the applicant's invention sets a limit on the number of accesses that are allowed. With Ji's system, accesses are not necessarily limited, it's just that the structure of the invention provides one or more accesses. The applicant's present invention limits the number of accesses." Examiner feel that if there is patentable difference between the prior art and the present invention,

it has not been clearly claimed. The newly enunciated limitation "setting a limit (bound) on accesses to the memory to obtain a next hop address" is met by Ji's teaching of setting a limit of 2 memory accesses for the 16/K data structure, and setting a limit of 3 memory accesses for the 16/Kc data structure. See Abstract.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Min Jung whose telephone number is 571-272-3127. The examiner can normally be reached on Monday through Friday 9:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MJ
July 25, 2006


Min Jung
Primary Examiner